Regional Transportation Plan

Final Draft Stage

Draft Plan Evaluation and Phasing Priorities – Transit Supplement

Maricopa Association of Governments

September 1, 2003

INTRODUCTION

The purpose of this working paper is to provide transit system evaluation and phasing priorities information on the Draft Final Stage of the Regional Transportation Plan (hereinafter referred to as the Draft Plan). The current working paper is a supplement to the "Final Draft Stage – Draft Plan Evaluation and Phasing Priorities" report, dated August 26, 2003. The reader is referred to the latter document for information on revenues and phasing methodology. The appendix to the current document contains maps of the proposed transit element of the Draft Plan.

<u>PLAN EVALUATION – TRANSIT ELEMENT</u>

The transit element of the Draft Plan was evaluated using the MAG travel demand model. (Note: The previous modeling scenarios presented in the May 22, 2003 report were targeted at a \$17.1 billion investment level, a funding level needed to include all potential projects in at least one of the scenarios. The most recent revenue estimates have resulted in a total of \$15.3 billion being available. Thus the results of the Draft Plan evaluation are not directly comparable to the previous results of the modeling scenario evaluations.) The preliminary results of the modeling effort are shown in Table 1 in the appendix.

PLAN PHASING - TRANSIT ELEMENT

The phasing plans for implementing the Regional Transportation Plan for the regional bus system and light rail transit/high capacity system are presented in Exhibits 1 through 6. For the convenience of the reader, all these exhibits are located at the end of the report text.

The phasing of the plan is described in terms of four phases covering the planning period as follows:

- Phase I 2006-2010
- Phase II 2011-2015
- Phase III 2016-2020
- Phase IV 2021-2025

The phasing concepts for the transit element are discussed below.

Regional Bus

The regional bus network includes the super-grid system and bus rapid transit system. The phasing for these systems is depicted in Exhibits 1, 2 and 4, which address new routes, as well as enhancements to existing bus transit services. Regional funding, with no local match requirement, has been identified in the Draft Plan for regional bus route operations.

The Draft Plan includes a network of regionally significant bus corridors. These corridors, collectively known as the "super-grid" network, provide regional connections across municipal jurisdictions at consistent levels of service. The super-grid addresses a major weakness of the current bus system, the wide variations in service hours and frequency created by local funding of routes.

The bus rapid transit (BRT) system provides riders with higher speed regional connections that serve two distinct trip needs. One type of trip addressed by this system is the traditional suburb to central city commute, the other trip need addressed is the suburb to suburb trip. This latter trip type is continuing to grow in significance as the region sees the development of multiple suburban employment centers.

The overall pattern of phasing for the regional bus transit component is discussed below.

Phase I:

Super-grid: In Phase I, the emphasis is on providing consistent levels of service across several key super-grid routes in the east, central and west valleys. These routes include Baseline/Southern, Glendale Avenue, Scottsdale/Rural, Chandler Blvd. Arizona Avenue and Gilbert Road. Also part of this first phase is service on Main Street in Mesa from the east terminus of the initial operating segment of the light rail transit system to Power Road. Rural connectivity will also be addressed in this phase with the initiation of service on two routes, one connecting Wickenburg with the transit center at Metro Center Mall in Phoenix, the other connecting Gila Bend with the Transit Center at Desert Sky Mall at 75th Avenue.

Bus Rapid Transit: The first phase of the BRT program will expand the reach of the express bus network by providing several key super-grid routes in the east, central and west valleys. Initial routes to be implemented include the Deer Valley Express running on I-17 from the Deer Valley park & ride to Central Station in Phoenix, the Grand Avenue limited which will run from Surprise to Phoenix on Grand Avenue, the Superstition Freeway Express connecting the communities of Mesa, Tempe and Phoenix by way of US 60, I-10 and Loop 202, and South Central Avenue which will provide connections between Central Station and the emerging south Phoenix residential and commercial areas.

Phase II:

Super-grid: Like in the previous phase, the objective is to provide consistent levels of service across several key super-grid routes in the east, central and west valleys. These routes include Peoria/Shea, Camelback, McDowell/McKellips Van Buren, University Broadway, Elliot, Ray Road, Hayden/McClintock, Dysart Road, 59th Avenue, Power Road, and Alma School Road.

Bus Rapid Transit: In this phase, the system will continue to grow with the addition of arterial BRT service in the east valley and freeway BRT extensions into the north

valley. The Main Street BRT in Mesa will provide a connection to the high capacity transit route at Mesa drive. The east terminus of the route will provide access to the regional retail center at Power Road and will also provide a gateway to the region's transit system for Pinal County to the east. The Arizona Avenue BRT will serve a similar function, providing a link to the LRT system as well as serving trip needs between Chandler and Mesa.

Phase III:

Super-grid: This phase continues building on the regional connections defined in the previous two phases. Responding to projected growth in the north and west valleys, the system adds considerable east-west and north-south capacity. Additional capacity is also added in the far southeast valley with service on Queen Creek Road linking the communities of Gilbert, Chandler and Phoenix with service from Williams Gateway to the Park & Ride at I-10 and Pecos Road.

Bus Rapid Transit: Phase III will see considerable investment in BRT operations in the east and north valleys. The Chandler Boulevard BRT will serve the developing tech corridor north of the Santan Freeway (Loop 202) in Chandler and provide a link to the emerging employment and educational centers at Williams Gateway Airport. The East Loop 101 connector will link major commercial and educational centers in Chandler, Tempe and Scottsdale and will serve a growing volume of work and university trips between these communities. The Scottsdale/Rural BRT will serve one of the region's busiest commercial corridors and provide access to the ASU main campus in Tempe, Old Town Scottsdale, and the Scottsdale Fashion Mall. The North Loop 101 connector will link the communities of Surprise, Peoria, Glendale, Phoenix and Scottsdale and will serve the emerging retail, financial and medical employment centers developing along the Loop 101 corridor.

<u>Phase IV:</u>

Super-grid: In this phase, the super-grid reaches maturity with the addition of additional north-south links in the east, central and west valleys. The Litchfield Road route will provide links between the southwest valley communities of Avondale and Goodyear and the northwest communities of Glendale, El Mirage and Surprise. The route also provides access to major employment centers at Goodyear Airport, Luke Air Force Base and the emerging regional retail centers in Surprise. The east and west valley links serve emerging suburban population centers while the central valley routes add additional capacity in the urban core. The Greenfield Road route in the southeast valley will address a growing volume of work trips between Gilbert and Mesa and provide access to Chandler, Tempe, Scottsdale and Phoenix through the route's connections with the University, Main, Broadway, Southern, Elliot, Ray and Chandler Boulevard routes.

Bus Rapid Transit: This phase addresses the substantial residential growth that is forecast for the southwest valley in the later years of the plan. By 2025 over 275,000 people are projected to live in Buckeye, a community with a current population 8,497 (2000 census). This is a tremendous amount of growth that will place considerable demands on the region's transportation networks. To address these demands, the plan includes freeway BRT service on I-10 providing connections between Buckeye, Goodyear, Avondale and Phoenix. The plan also includes service on the Loop 303 corridor between I-10 and Surprise to serve trip needs in the west valley. In south Phoenix, the plan includes BRT service on Baseline Road from Laveen to the Arizona Mills transit center in Tempe. The plan also includes BRT service between Laveen and the Ed Pastor Transit Center in South Phoenix. Other BRT service included in the plan for this period is the SR. 51 corridor linking north Phoenix with the central valley and the Santan Express, which will provide rapid connections between Williams Gateway Airport and Phoenix by way of the Santan Freeway (Loop 101) and I-10

High Capacity Corridors

The high capacity transit corridors identified for the region are depicted in Exhibits 3 and 5. Regional funding has been identified only for capital investments for this category.

The light rail plan includes a 57.5-mile system, which incorporates the 20 mile minimum-operating segment (MOS) designated in the Central Phoenix/East Valley MIS, a 5 mile extension to Metro Center, a 5 mile extension to downtown Glendale, an 11 mile extension along I-10 west to 79th Avenue, a 12 mile extension to Paradise Valley Mall and a 2 mile extension south of the MOS on Rural Road to Southern Avenue. In addition, a 2.5 mile extension from the east terminus of the MOS to Mesa Drive is included with the technology for this segment to be determined. The MOS is scheduled for completion in late 2006.

<u>Phase I:</u> This phase will see the completion of the minimum operating segment (MOS) of the LRT system, as well as construction of an extension to the Metro Center Mall Transit Center.

<u>Phase II:</u> In this phase, line extensions will be added from the MOS south on Rural Road in Tempe to Southern Avenue, and east on Main Street in Mesa from the current end of line at Longmore to Mesa Drive.

<u>Phase III:</u> This phase will see the construction of line extensions west along I-10 to 83rd Avenue and west along Bethany Home Road to the Chandler Municipal complex at 59th and Grand Avenue. I-10 extension will be the first route segment constructed within a freeway corridor and will utilize line stations located within the freeway corridor and station parking located adjacent to the freeway corridor.

<u>Phase IV:</u> With the construction of the SR 51 extension the planned program of LRT extensions will be completed. This phase will also see preliminary studies of high

capacity corridors identified within the plan but not funded for construction within the plan's 2025 horizon.

ADA Paratransit

For those ADA eligible patrons whose disability precludes using the fixed route bus system, transit agencies provide a parallel demand response service within three-quarters of a mile of all fixed transit routes. Since providing accessible transit service is a continuing requirement, the Plan includes funding for ADA paratransit service that would expand in sync with the Plan's fixed route bus and light rail transit systems.

Bus Transit Facilities

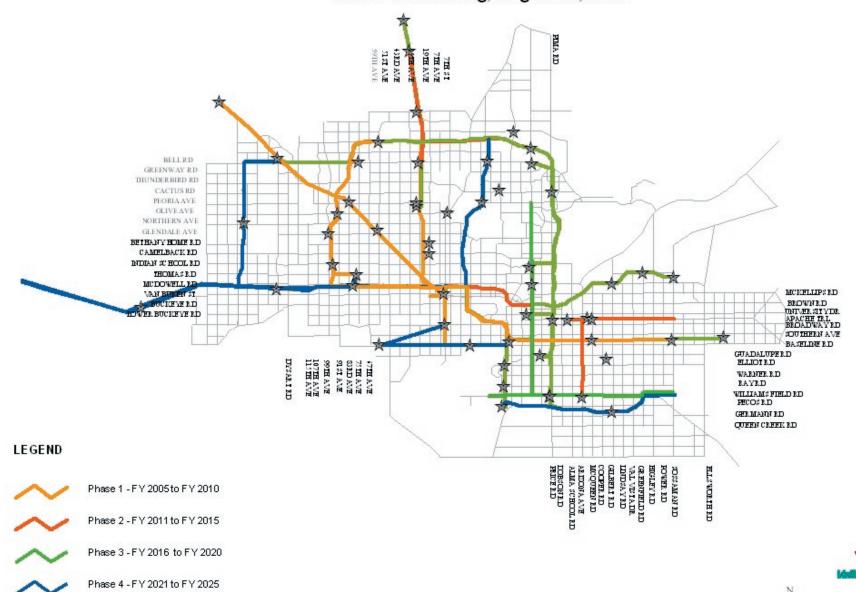
All the bus transit service described in the plan includes a capital cost component. Capital costs include vehicles, passenger facilities, maintenance facilities, and right of way improvements. Transit fleet sizes necessary to support the 20 year transit program are determined by annual revenue miles of service and by the lifecycle of specific types of vehicles. Capital maintenance facility requirements are in turn driven by fleet size. Passenger facilities, which include both park & ride lots and transit centers, are determined by route characteristics and phasing.

Exhibit 6 details the funding requirements for all vehicle and fixed capital facilities needed to provide and maintain the transit services described in the plan. Phasing for maintenance facilities will be based on the phasing of new service and the lifecycle of the vehicles. Similarly, passenger facilities (including park & ride lots) are planned to come online in specific corridors when planned transit routes are implemented.

PROPOSED SUPER GRID AND RURAL SERVICE Draft Plan Phasing, August 26, 2003



PROPOSE FREEWAY AND ARTERIAL BRT ROUTES Draft Plan Phasing, August 26, 2003



Planned or Existing Passenger Facility

0 2.5 5

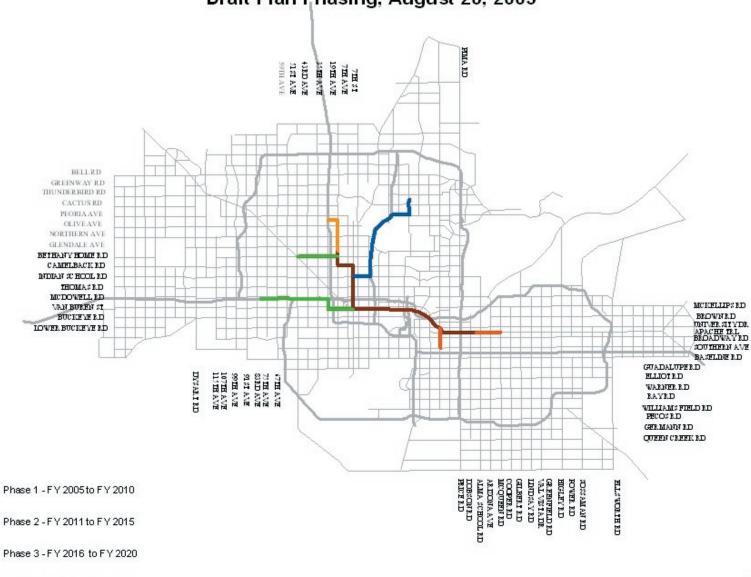
10 Miles

Regional Public

Transportation

Authority

Draft Plan Phasing, August 26, 2003





Phase 4 - FY 2021 to FY 2025

LEGEND

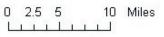






Exhibit 4: Regional Bus Services Phasing*

Seg	Segment	Phase (Begin Service)	Operating Cost (2002 Dollars, Millions)	Operating Cost by Phase (2002 Dollars, Millions)			
				Phase I	Phase II	Phase III	Phase IV
reeway Expre	ess/BRT						
	rth Loop 101 Connector Surprise to Scottsdale P&R)	ļ	4.6	1.0	1.1	1.1	1.3
	rth Glendale Express	I	9.5	1.8	2.5	2.5	2.8
	pago Fwy Connector (to West Buckeye P&R)	1	3.3	0.6	0.9	0.9	1.0
We	est Loop 101 Connector (to North Glendale P&R)	1	5.1	0.9	1.3	1.3	1.5
Eas	st Loop 101 Connector	1	3.3	0.5	0.9	0.9	1.0
Red	d Mountain Express	1	14.4	2.0	4.0	4.0	4.4
Mai	in Street Dedicated BRT	1	10.2	1.4	2.8	2.8	3.1
Des	sert Sky Express	1	8.9	0.8	2.6	2.6	2.9
	ache Junction Express	1	3.5	0.3	1.0	1.0	1.1
	zona Avenue Dedicated BRT	1	8.7	0.8	2.6	2.6	2.8
	ckeye Express (to West Buckeye P&R)	i	1.7	0.1	0.5	0.5	0.6
	perstition Fwy Connector	i	0.8	0.0	0.2	0.3	0.3
	na Express (To Airpark P&R)	ii	3.2	0.0	0.8	1.1	1.3
	and Avenue Limited	ii	5.4	0.0	1.4	1.9	2.1
		;; 		0.0	1.4		3.5
	oria Express (to Peoria P&R)		7.6			3.2	
	Central Avenue	II	21.5	0.0	2.7	9.0	9.9
	uth Central Avenue Dedicated BRT	II	3.8	0.0	0.5	1.6	1.8
	ack Canyon Freeway Corridor	II	4.9	0.0	0.2	2.2	2.4
	watukee Connector	III	1.1	0.0	0.0	0.5	0.6
Sar	ntan Express	III	9.2	0.0	0.0	2.9	6.3
Ant	them Express	III	2.5	0.0	0.0	0.5	1.9
Red	d Mountain Fwy Connector	III	2.3	0.0	0.0	0.5	1.8
	perstition Springs Express	III	15.7	0.0	0.0	3.4	12.3
	er Valley Express	III	9.5	0.0	0.0	0.8	8.7
	ondale Express	III	6.6	0.0	0.0	0.6	6.1
	rth I-17 Express	IV	0.7	0.0	0.0	0.0	0.7
	op 303 Express	IV	3.7	0.0	0.0	0.0	3.7
	·	IV	5.5	0.0	0.0		
	I. 51 Express					0.0	5.5
	andler Boulevard Dedicated BRT	IV	14.3	0.0	0.0	0.0	14.3
	watukee Express	IV	12.2	0.0	0.0	0.0	12.2
Reg	gional Passenger Support Services		22.2	1.1	2.9	5.3	12.8
ub-total			\$225.7	\$11.2	\$30.0	\$54.0	\$130.
upergrid Rout	<u>ite</u>						
Sco	ottsdale/Rural	1	93.2	21.0	23.3	23.3	25.6
Gle	endale Avenue	I	11.7	2.2	3.1	3.1	3.4
Mai	in Street	1	17.2	2.4	4.8	4.8	5.3
Bas	seline/Southern/Dobson ext	1	88.2	7.8	26.0	26.0	28.5
Ariz	zona Avenue/Country Club	1	25.6	2.3	7.5	7.5	8.3
	bert Road	1	26.9	2.4	7.9	7.9	8.7
	andler Blvd.	i	22.5	0.7	7.0	7.0	7.7
	iversity Drive (to Ellsworth Road)	ii	42.8	0.0	12.8	14.3	15.7
	melback Road						
_	1	II	6.2	0.0	1.9	2.1	2.3
	padway	II 	41.5	0.0	10.4	14.8	16.3
	ot Road	II 	41.1	0.0	10.3	14.7	16.1
	na School Rd.	II	27.1	0.0	6.8	9.7	10.
-	yden/McClintock	II	42.2	0.0	8.1	16.2	17.8
	oria Ave./Shea (3)	II	12.8	0.0	2.5	4.9	5.4
	sart Road	II	8.3	0.0	1.6	3.2	3.5
59tl	th Avenue	II	11.5	0.0	1.4	4.8	5.3
McI	:Dowell/McKellips	II	35.7	0.0	4.5	14.9	16.4
	wer Road	II	15.4	0.0	1.9	6.4	7.0
	tum/44th Street	ii	3.9	0.0	0.5	1.6	1.8
	y Road	ii	42.4	0.0	5.3	17.7	19.4
	n Buren	ii	8.7	0.0	0.4	3.9	4.3
	een Creek Road (Pecos P&R to Power Road)	III	26.1	0.0	0.4	10.1	15.9
	,	III					
	II Road (via 303)		14.9	0.0	0.0	4.7	10.3
	addell/Thunderbird	III	5.3	0.0	0.0	1.7	3.7
	omas Road (2)	III	11.9	0.0	0.0	3.7	8.2
	ckeye Road (Litchfield Road to Central Ave.)	III	2.1	0.0	0.0	0.4	1.6
	lian School Road	III	9.6	0.0	0.0	2.1	7.5
Dur	nlap/Olive Avenue	III	5.6	0.0	0.0	1.2	4.4
99tl	th Avenue	III	1.8	0.0	0.0	0.4	1.4
83r	rd Avenue/75th Avenue	IV	4.8	0.0	0.0	0.0	4.8
	chfield Road	IV	3.1	0.0	0.0	0.0	3.1
	eenfield Road	IV	5.3	0.0	0.0	0.0	5.3
	gional Passenger Support Services	1 V	79.3	4.3	16.4	25.8	32.8
หยุ ub-total	gionai i asserigei Support Services		79.3 \$794.6	4.3 \$42.9	\$164.3	\$258.8	\$328
			•				0

Exhibit 5: Light Rail Transit Phasing

Facility	Segment	Length	Region	al Cost	<u>Phase</u>
	_		Route	Support	
		Constructionfrastructure			
Light Rail Transit					
MOS	19th Ave/Bethany Home to Apache/Longmore	20		164.0	
Metro Center Link	19th Ave/Bethany Home to Metrocenter	5	150.0	30.0	l
Glendale Link	19th Ave/Bethany Home to Downtown Glendale	5	150.0	30.0	III
I-10 West Link	Washington/Central to I-10 / 79th Ave	11	660.0	0.0	III
Northeast Phoenix Link	Indian School/Central to Paradise Valley Mall	12	720.0	0.0	IV
Tempe South Link	Main/Rural to Rural/Southern	2	120.0	0.0	II
East Mesa Link	Main/Longmore to Main/Mesa Dr	2.5	150.0	0.0	II
Systemwide				154.0	
Total		57.5	\$1,950.0	\$378.0	

Exhibit 6
Schedule of Bus-related Capital Investments

Cost Item	Unit Type	Units	Spares	Cost/Unit	Total Cost
Fleet					
rieet					
Fixed Route Networks	Bus	1,773	365	\$400,000	\$855,000,000
Rural Routes	Rural Bus	30	6	\$60,000	\$2,160,000
Paratransit	DAR Van	830	170	\$72,000	\$72,000,000
Van Pool	Vanpool Van	1350	54	\$30,000	\$42,120,000
Capital Facilities					
13 Park & Ride Lots	Per Parking Space	3500		\$14,000	\$49,000,000
6 Transit Centers, 4 Bay	Facilities	6		\$1,600,000	\$9,600,000
4 Transit Centers, 6 Bay	Facilities	4		\$2,300,000	\$9,200,000
3 Transit Centers, Major Activity Centers	Facilities	3		\$5,500,000	\$16,500,000
5 Bus Maintenance Facilities	Vehicle	1425		\$118,000	\$168,150,000
2 DAR & Rural Bus Maintenance	Vehicle	518		\$32,000	\$16,576,000
1 Vanpool Maintenance	Vehicle	778		\$6,000	\$4,668,000
Dedicated BRT ROW & Maint	10 Miles	10		\$7,600,000	\$76,000,000
Arterial BRT ROW Improvements	Per Mile	50		\$330,000	\$16,500,000
Bus Stop Pullouts/Improvements	Avg per Location	1200		\$22,000	\$26,400,000
ITS/VMS	Per Vehicle	2,154		\$11,000	\$23,688,500
Contingency	5%				\$66,137,500
TOTAL					\$1,453,700,000
			26.6%	RARF:	\$387,400,000
			73.4%	FEDERAL:	1,066,300,000
			1		
Component	Total	Percent		Sales Tax	Federal
Bus Capital	\$895,753,164	61.6%		238,711,410	657,041,755
Facilities	\$436,124,405			116,223,839	319,900,566
Paratransit	\$75,431,845			20,102,013	55,329,832
Vanpool	\$44,127,630			11,759,678	32,367,952
Rural	\$2,262,955	0.2%		603,060	1,659,895
Total Capital	\$1,453,700,000	100.0%		387,400,000	1,066,300,000

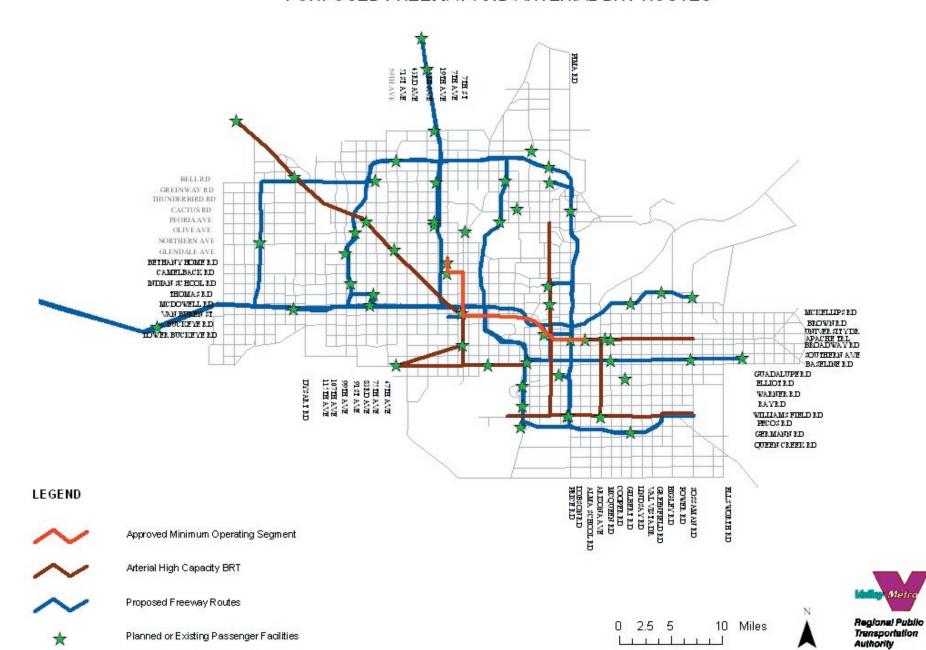
APPENDIX

- Map 1 Super-grid System
- Map 2 Freeway and Arterial BRT Routes
- Map 3 High Capacity Corridors
- Table 1 Preliminary Transit Modeling Results

PROPOSED SUPER GRID SYSTEM: New, Enhanced, Existing and Rural Service



PORPOSED FREEWAY AND ARTERIAL BRT ROUTES



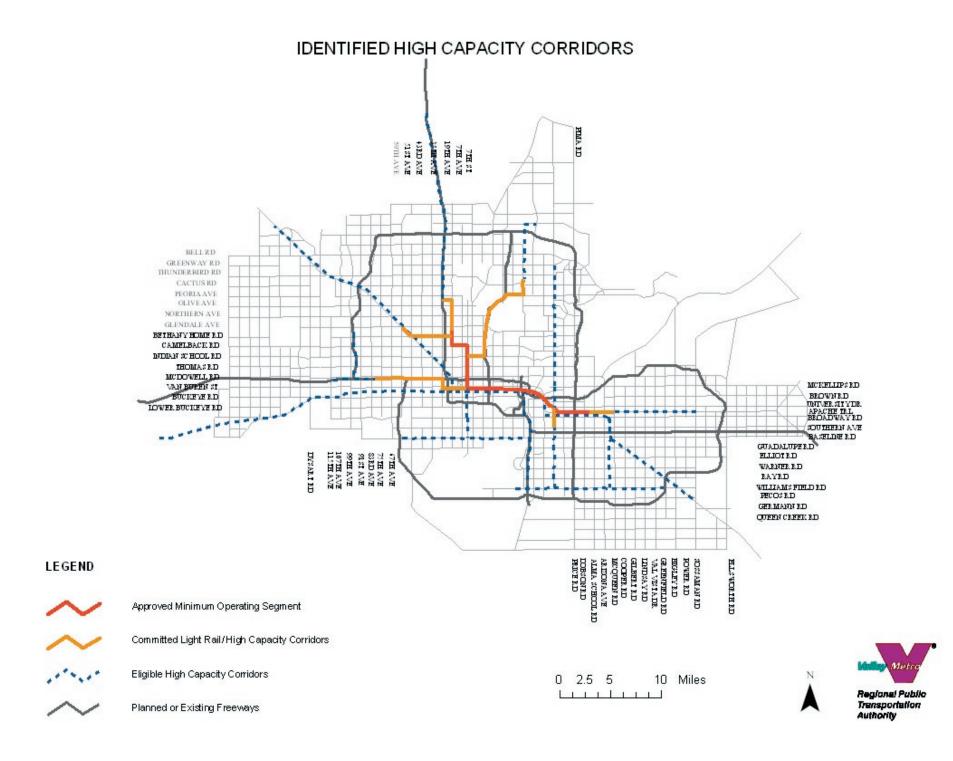


Table 1 **Preliminary Transit Modeling Results**

	2000 Network	2025 Base Network	2025 Draft Plan
Total transit boardings	168,519	253,025	343,150
Transit boardings by submode Bus ¹ LRT ²	168,519 0	206,265 46,760	257,074 86,076
Households within one- quarter mile of transit	*	751,040	885,416
Jobs within one-quarter mi. of transit service	*	1,469,158	1,787,900
Households within 5 miles of park-and-ride lots and transit centers	*	556,501	845,784
Transit dependent pop. served ("0" auto hsehld. within on-quarter mi. of transit)	*	82,943	87,486

Does not reflect ridership from potential expansion of local bus services.
 Does not reflect sub-model for Sky Harbor Airport and special events.